

REMARKS

Claims 1-16 are currently pending in the subject application and are presently under consideration. Claim 10 has been canceled. Claims 1-4, 6-7, 9, 11-13 and 15-16 have been amended. Claims 17-42 have been canceled and are being pursued in divisional applications. Applicants' representative thanks the Examiner for the withdrawal of the rejection under 35 U.S.C. §101.

Favorable reconsideration of the subject patent application is respectfully requested in view of the comments and amendments herein.

I. Rejection of Claims 1-4, 6, 7, 9-14 and 16 Under 35 U.S.C. §102(e)

Claims 1-4, 6, 7, 9-14 and 16 stand rejected under 35 U.S.C. §102(e) as being anticipated by Teegan, *et al.* (US 6,748,555). This rejection should be withdrawn for at least the following reasons. Teegan *et al.* does not disclose ***each and every*** limitation of the subject claims.

A single prior art reference anticipates a patent claim if “***each and every*** limitation set forth in the patent claim” is disclosed either expressly or inherently. (*Trintec Industries, Inc. v. Top-U.S.A. Corp.*, 295 F.3d 1292, 1295, 63 U.S.P.Q.2d 1597, 1599 (Fed. Cir. 2002) (citing to *Verdegaal Bros., Inc. v. Union Oil Co.*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1052-53 (Fed. Cir. 1987))) (emphasis added). Moreover, “[t]he ***identical*** invention must be shown in as ***complete*** detail as is contained in the patent claim.” (*Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989) (citing *Jamesbury Corp. v. Litton Industrial Products, Inc.*, 756 F.2d 1556, 1560, 225 U.S.P.Q. 253, 257 (Fed. Cir. 1985); and *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548, 220 U.S.P.Q. 193, 198 (Fed. Cir. 1983))) (emphasis added).

Teegan *et al.* discloses a software manager for monitoring software objects. (*See e.g.*, Teegan *et al.* at Abstract). The software manager is operable to derive program-level metrics to provide an overall picture of a software object's performance. (*See e.g., Id.*). Teegan *et al.* does not disclose gathering and aggregating operational metrics indicative of one or more ***states of a plurality of member machines configured as an array of machines***, a unified result set indicative of the ***system-wide state of the array of machines*** or an interface for providing the unified set result to a requestor ***as if the array of machines were a singular machine*** as recited in the subject claims.

II. Rejection of Claims 1, 3-8 and 15 Under 35 U.S.C. §102(e)

Claims 1, 3-8 and 15 stand rejected under 35 U.S.C. §102(e) as being anticipated by Salzberg, *et al.* U.S. Publication No. 2003/0086536, KPMG Consulting Inc. (hereinafter Salzberg-KPMG). This rejection should be withdrawn for at least the following reasons. A declaration under 37 C.F.R. §1.131 was previously filed on May 23, 2005, a copy of which is enclosed herewith. This declaration shows that the subject matter recited in the claims was reduced to practice prior to the effective date of Salzberg-KPMG. Accordingly, this rejection should be withdrawn.

CONCLUSION

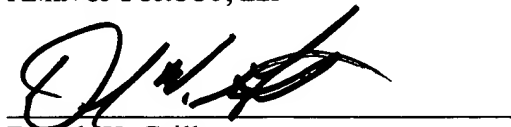
The present application is believed to be in condition for allowance in view of the above comments and amendments. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063 [MSFTP125US].

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicants' undersigned representative at the telephone number below.

Respectfully submitted,

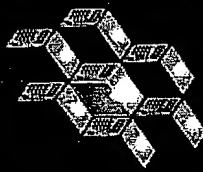
AMIN & TUROCY, LLP



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Main MMC console

Application Center 2000

Application Center Server - [Console Root\Application Center Server\MyKillerCluster]

Console Window Help

Action View Favorites

Tree Favorites

- Console Root
 - Application Center Server
 - MyKillerCluster
 - Members
 - Console MMC
 - All Tasks
 - New Window/Interface
 - Refresh
 - Properties
 - Help
 - Set Offline
 - Remove server from RAC
 - Server Status
 - ORIBRIG-OLAS Online, Alive
 - Cluster Performance
 - Synchronize the cluster
 - Refresh
 - Charted Period: Fifteen Minutes

Contains operations that can be performed on the object.

MYKILLERCLUSTER UNKNOWN

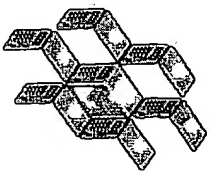
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Add Remove

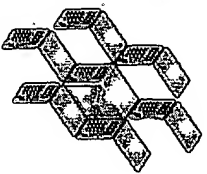
Help on this page

EXHIBIT A



Monitoring

- Integrated monitoring tools
 - Roll up perf, event, log data from across multiple servers into integrated console
 - Allow drill down into specific machines, resources
 - NON GOAL: Usage Analysis / Data Mining
- Self-healing, Self-tuning
 - Monitor health of servers and applications
 - Set thresholds for acceptable performance
 - Fix it if we can



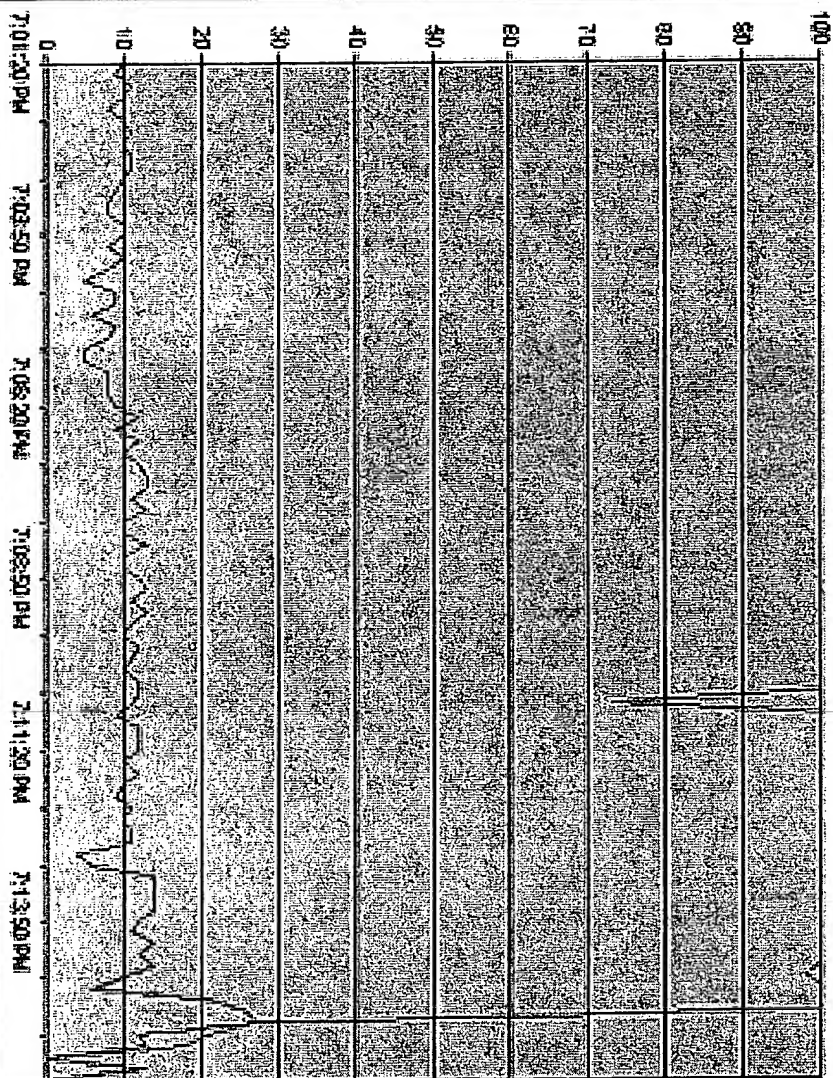
AppCenter Performance Monitor

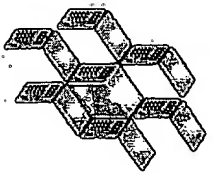
- Real-Time to Intraday to Weeks to Years
 - Rollup data to store larger time periods
 - Interpolate down large time periods to fit chart
- Graphing View
 - Can select which counters to graph
 - Counters in a 10-15 preset list.
 - Last value, avg/sum, min, max across servers
- Default charts in main UI
- Custom charts in separate windows

Performance Monitor

LEONARD O'NEILL, President,
121 Madison Ave., New York, 17, N.Y.

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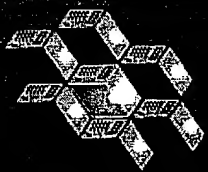
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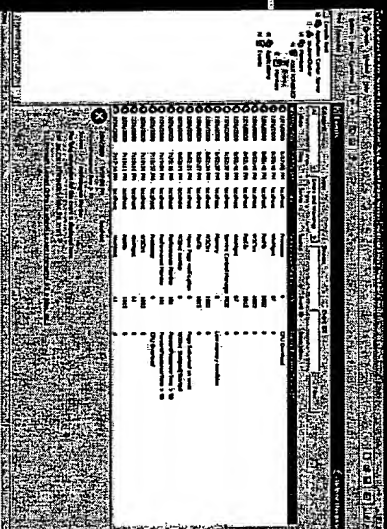
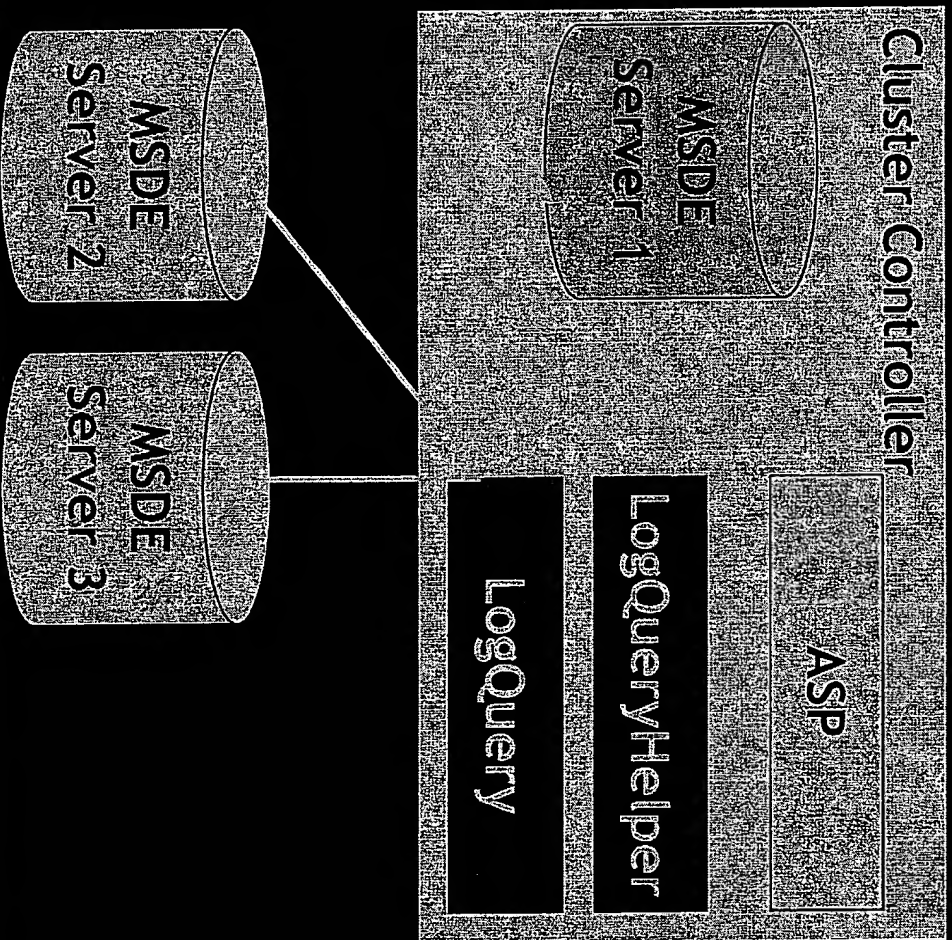
Viewing the Logs

- View event logs for cluster or per server
 - Log agent does distributed query, aggregates, and sorts
- Cluster Event Viewer (AppCenter, Windows, etc.)
 - Filter by source, type, date, server, severity

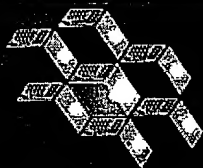
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Distributed Query Architecture



1. Parse Query
2. Run Query
3. Aggregate and Format Results
4. Return to UI



Application Center 2000

Eventing

Logging

Monitoring

Event Viewer

Application Center Server - [Console Root\Application Center Server\ASITONBRIC\ASV\events]

Source: Windows

View: Event List

Filter: All

Events

Time	Source	Event ID	Description
2/26/2000 8:57:50 PM	localhost	101	Performance Monitor
2/26/2000 8:57:50 PM	localhost	0	Processor
2/26/2000 8:55:46 PM	localhost	37	WinMgmt
2/26/2000 8:55:42 PM	localhost	2002	PerfB
2/26/2000 8:52:49 PM	localhost	1003	W3Cts
2/26/2000 8:52:46 PM	localhost	1015	PerfB
2/26/2000 8:52:46 PM	localhost	37	WinMgmt
2/26/2000 8:52:37 PM	localhost	0	Service Control Manager 7032
2/26/2000 8:52:37 PM	localhost	0	Memory
2/26/2000 8:52:34 PM	localhost	1003	W3Cts
2/26/2000 8:52:27 PM	localhost	1015	PerfB
2/26/2000 8:52:21 PM	localhost	0	Home Page verification
2/26/2000 8:52:19 PM	localhost	0	W3Svc Stopped/Started
2/26/2000 7:28:16 PM	localhost	101	Performance Monitor
2/26/2000 7:19:54 PM	localhost	101	Performance Monitor
2/26/2000 7:18:34 PM	localhost	0	Processor
2/26/2000 7:18:34 PM	localhost	1003	W3Cts
2/26/2000 7:18:16 PM	localhost	61	WinMgmt
2/26/2000 7:18:11 PM	localhost	1015	PerfB
2/26/2000 7:17:16 PM	localhost	61	WinMgmt
2/26/2000 8:57:50 PM	localhost	0	CPU Overload

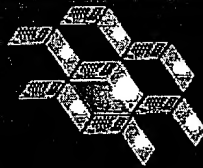
Source: Performance Monitor

The top description for this event is displayed here.

Expand node information about this event.

Microsoft Support Online for latest support information (a link to a web page)





Events

Logins

Performance

Events: Details



2/26/2000 8:57:50 PM

Localhost

Percent Processor time > 90

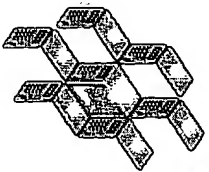
Source: Performance Monitor

The long description for this event is displayed here.

Find out more information about this event.

Visit Microsoft Support Online for related support information (KB articles, etc.).

- Severity, date, time, server
- Description
- Category, subcategory
- Long Message
- Links to help and support

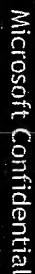


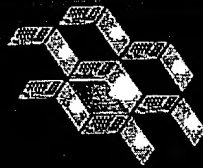
Cluster Event Rollup

- Rollup in LogQueryHelper
 - Events aggregated across the cluster
 - Sorted by time
- Creates virtual record set
 - Paging in the uses same query
 - Pass GUID of last record seen as bookmark
 - Page up, down, top, bottom
- Unreachable server is "soft error"
 - Available data returned with an error



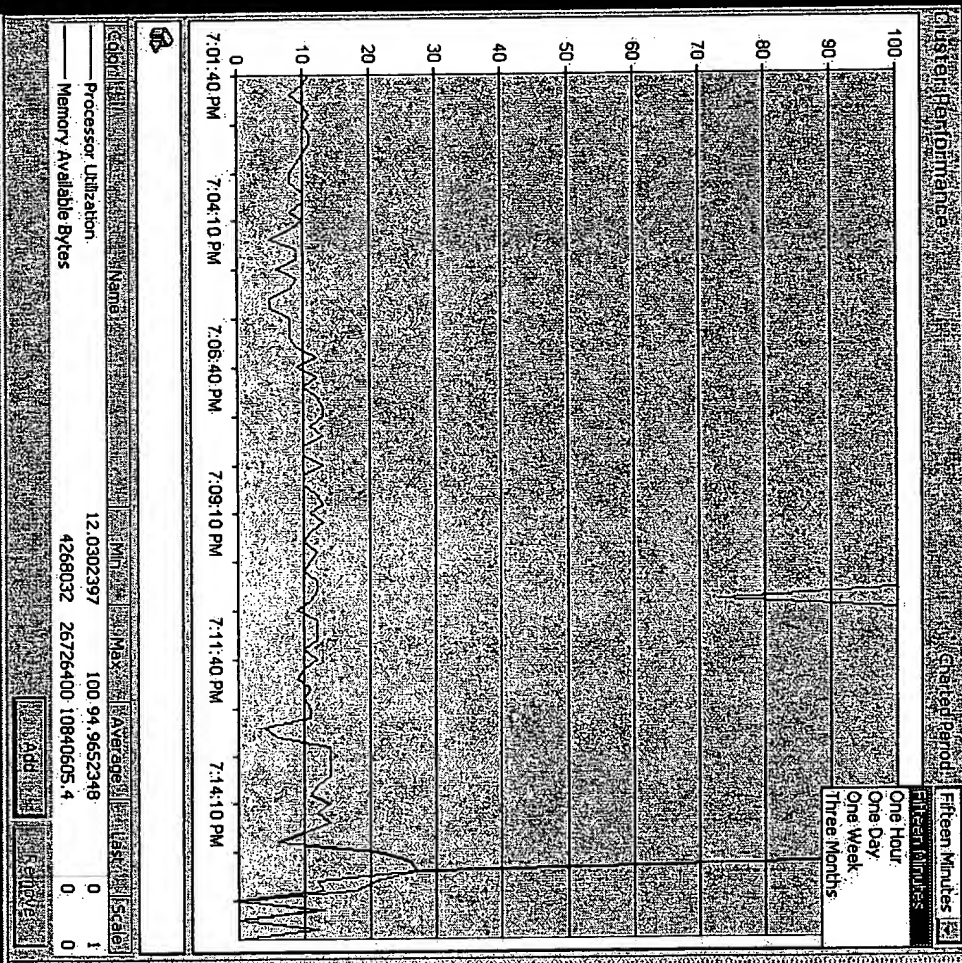
Performance Volver

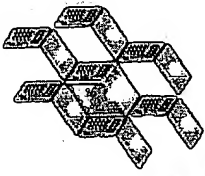




Performance Viewer

- Add Counters
- Time periods
 - 15 minutes
 - 1 hour
 - 1 day
 - 1 week
 - 3 months
- Auto scaling
- Default counters
- Persist selection





Performance Viewer Cluster Rollup

- Aggregation method in counter configuration
 - 0 - None
 - 1 - Average of Values
 - 2 - Sum of Values
 - 3 - Last Value
 - 4 - Min Value
 - 5 - Max Value
- Cumulative counters reset to 0 each session
 - Different from perfmon
 - Growth vs. spikes
- Can't show one counter across server



MCA 3270

Monitor Multiple Configuration

• Drag and Drop

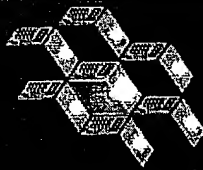
Statistics

Features:

- **Non-Printed Memory**
- **Sample Applications**
- **Synchronized Monitors (Application Center)**
- **Actions**
- **Assistant**
- **Application Center Monitors**
- **Application Office Monitors**
- **Storage Monitor**
- **Memory**
- **Low memory condition**
- **Processor**
- **System Monitor**
- **Statistics**

Details Statistics





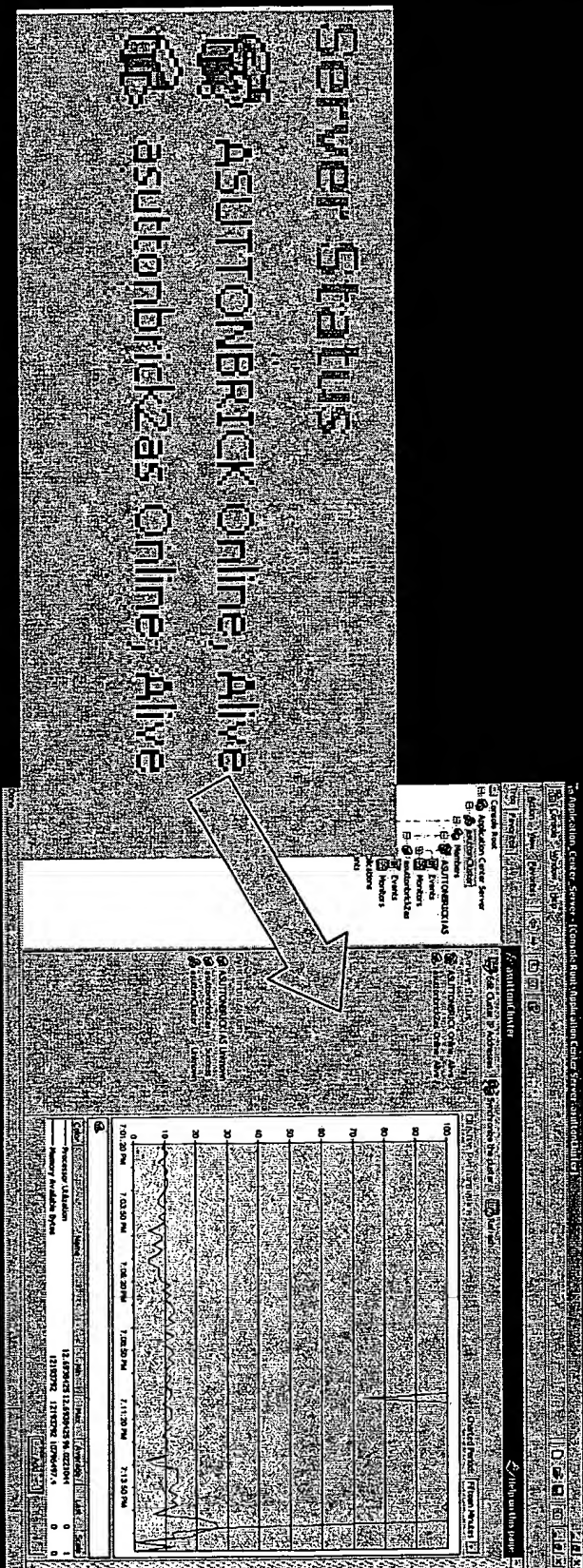
Events

Logins

Security

Server Health Rollup

- Top-level view of server health
- System status from HealthMon
- Not the online/offline group



Microsoft
PDC 2000
Professional Developers Conference

the defining
point

Application Center 2000: Ensuring Reliability/Availability of Web and Component Applications

Justin Grant
Lead Program Manager
Application Center

Agenda...

- Application Center 2000 overview

- Distributed Application Monitoring

- WMI: the infrastructure of management of Windows DNA and .NET

- Managing and guaranteeing application availability with Application Center

 - Performance Management

 - Event Management

 - Health Monitor for automated "lights-out" recovery from application or system failures

Scale-Out

- Software scale-out model works
 - Cost-effective using commodity hardware
 - Scalable by adding more servers
 - Highly reliable
- But...
 - Ongoing operational costs
 - Difficult to deploy apps
 - Difficult to monitor apps for proactive management
 - Difficult to test apps

- Application Center 2000:
Lower cost & complexity of scale out

AC 2000: Functional Overview

■ Simple *Application* Management

- Single application image
- Deployment and synchronization

■ Software Scaling Made Easy

- On-demand scalability
- Integrated load balancing management

■ Mission-Critical Availability

- No single point of failure
- Performance and health monitoring

Platform Support

■ WinDNA 2000

- Win2K Server, Advanced, DataCenter
- IIS 5, Active Server Pages (ASP)
- COM+ 1.0
- WMI

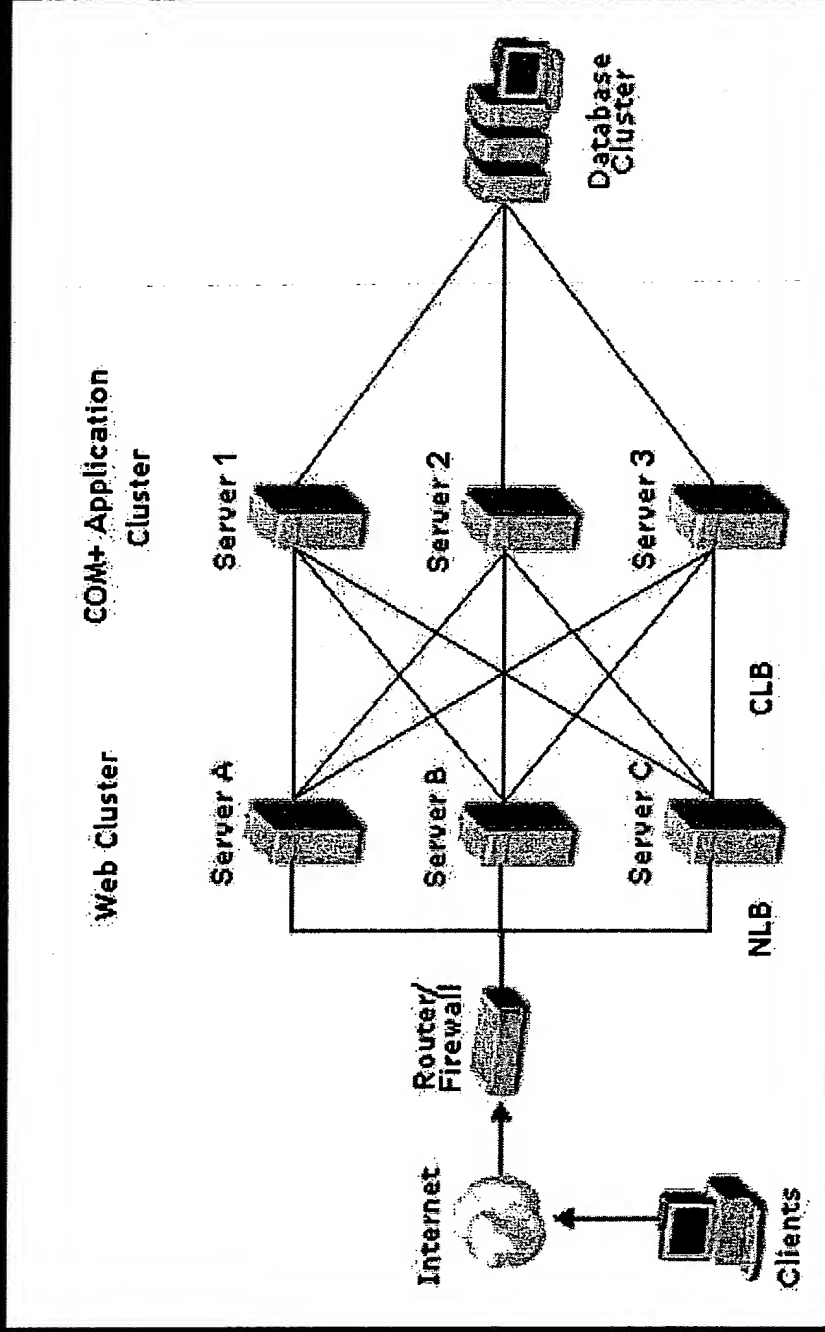
■ .NET

- Load Balancing for Web Services, ASP+ integrated with application-level monitoring
- Richer instrumentation of .NET framework
- Easier instrumentation of .NET applications
- More integration with Application Center

Application Center Scenarios

- **.COM's**
- **Hosting Providers & ASP's**
- **Intranet**
- **Web Services**

Application Center Topology



web + biz-logic + data
tier tier tier

Application Center 2000: High-Availability Architecture

■ “Shared Nothing” clusters

- No single point of failure
- Application availability not affected if Cluster Controller fails
- Fault-tolerant load balancing protects users from server or application failures

■ Local Monitoring

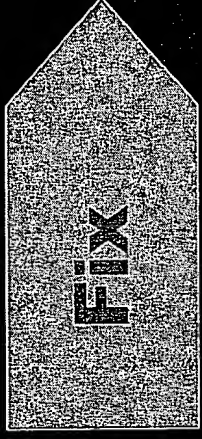
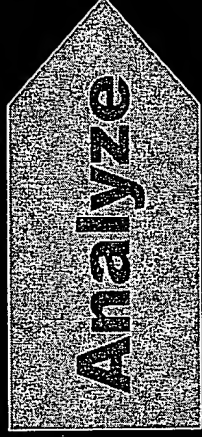
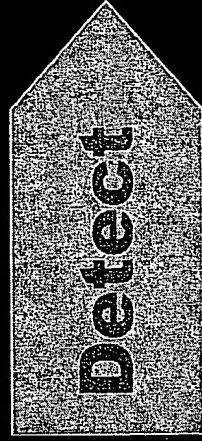
- Every server monitors itself
- If critical failure detected, server can remove itself from load balancing

■ Remote Monitoring

- Rich application-level (HTTP, TCP/IP, etc.) and network level (ICMP, SNMP, etc.) remote monitoring

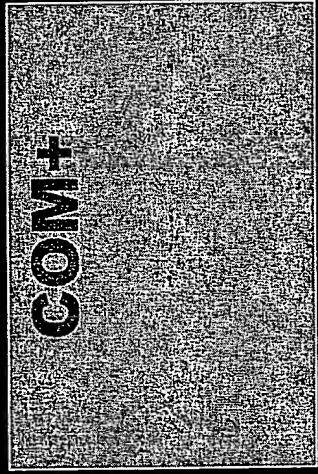
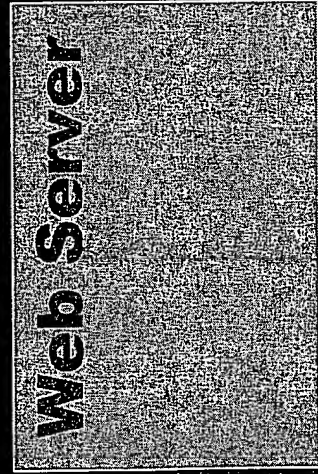
Monitoring For Availability

Goal: Customers can access your site

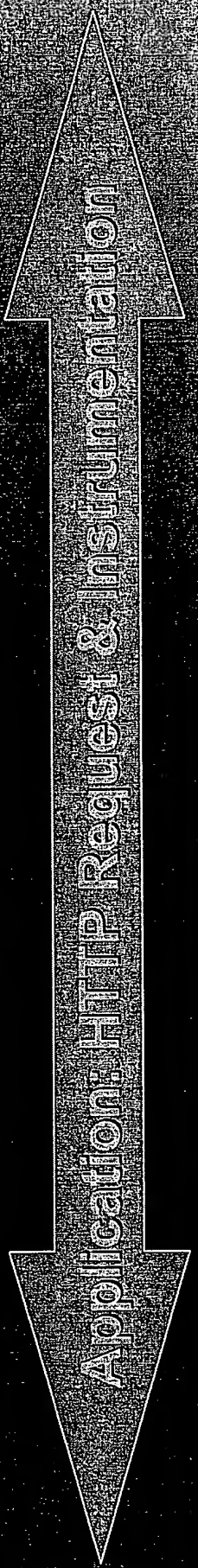
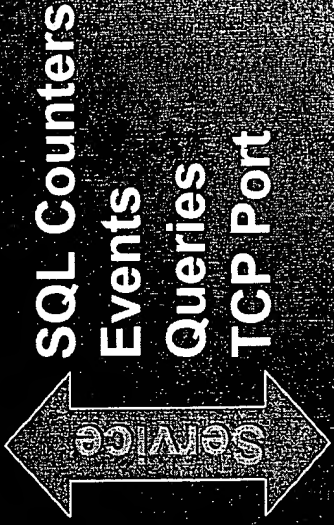
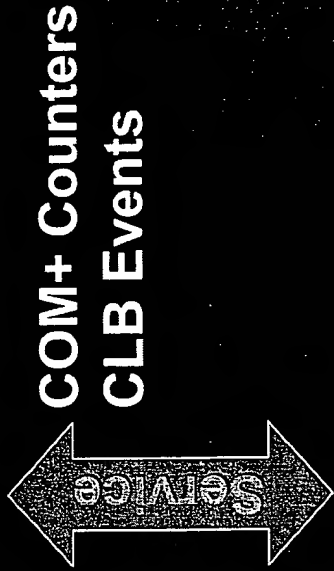
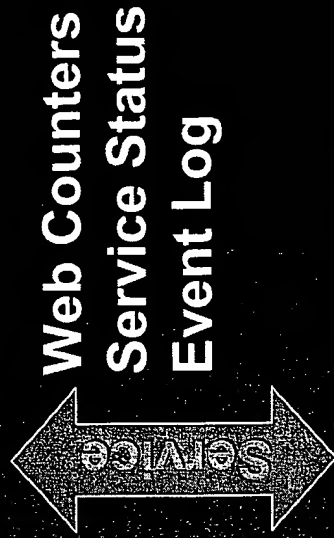
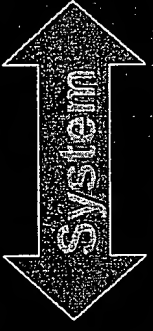
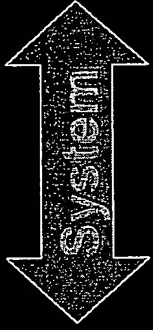


WMI + Application Center

Monitoring Health



System: Processor, Memory, Disk



Demo: System Health

A grey arrow pointing to the right, containing the word "Detect" in bold black text.

Detect

A grey arrow pointing to the right, containing the word "Analyze" in bold black text.

Analyze

A grey arrow pointing to the right, containing the word "Fix" in bold black text.

Fix

- Create monitor for CPU overload
- Associate action
- Generate CPU load
- Health Monitor console
- E-mail to administrator

Using Health Monitor

Health Monitor - [Health Monitor\All Monitored Computers]

Console Window Help

Action View Favorites

Tree Favorites

Health Monitor

- All Monitored Computers
 - ASUTTOND-TEST
 - Actions
 - Non-Synchronized Monitors
 - Sample Monitors
 - Synchronized Monitors (Application Center)
 - Application Center Monitors
 - Online/Offline Monitors
 - W3Svc monitor
 - System Monitors
 - Processor
 - Web Site Monitors
 - Home Page verification

Details Statistics

Children of All Monitored Computers

| Name | Status | Domains | OS | WMI Version | Normal | Warnings | Critical |
|-----------|----------|---------|---------------|--------------|--------|----------|----------|
| ASUTTO... | Critical | REDMOND | Microsoft ... | 1.50.1085... | 1 | 0 | 1 |

1 Items

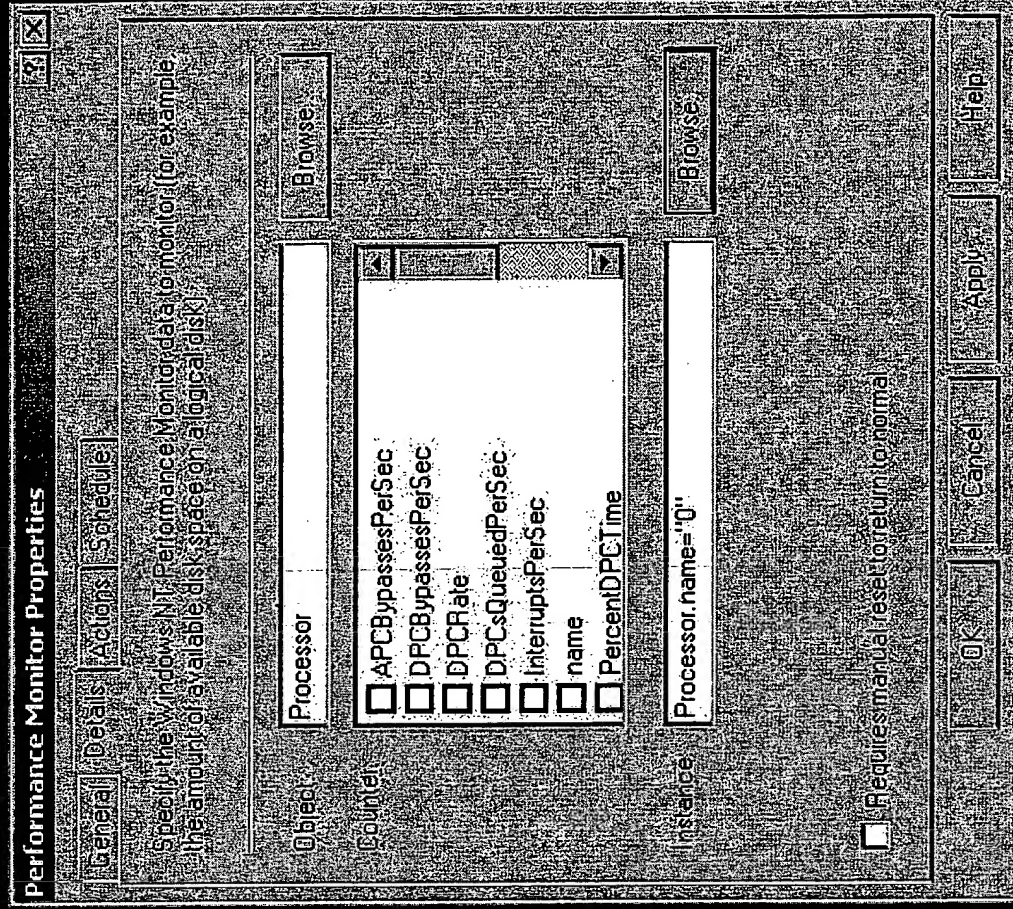
Alerts for All Monitored Computers and its children

| Severity | ID | Date/Time | Data Collector | Computer |
|----------|-----|---------------------|------------------------|---------------|
| Reset | 102 | 6/3/2000 3:54:37 PM | Processor | ASUTTOND-TEST |
| Critical | 302 | 6/3/2000 3:54:37 PM | Home Page verification | ASUTTOND-TEST |
| Reset | 301 | 6/3/2000 3:54:37 PM | Home Page verification | ASUTTOND-TEST |
| Reset | 201 | 6/3/2000 3:55:07 PM | W3Svc monitor | ASUTTOND-TEST |

0 Items

Data Collectors

- Perf counter
- Event Log
- Service/Process
- COM+ Application
- HTTP requests
- File or Directory
- Ping
- TCP/IP port connect
- WMI instance, event and data queries



Schedule

- Collection Times
- Interval
- Average

Processor Properties

General Details Actions **Schedule**

Specify when and how often to collect data. You can also specify how many data samples are used to calculate the average value.

Collection days

| | | | |
|--|--|--|---|
| <input checked="" type="checkbox"/> Sunday | <input checked="" type="checkbox"/> Monday | <input checked="" type="checkbox"/> Tuesday | <input checked="" type="checkbox"/> Wednesday |
| <input checked="" type="checkbox"/> Thursday | <input checked="" type="checkbox"/> Friday | <input checked="" type="checkbox"/> Saturday | |

Collection times

☐ All day

☐ Only from to

☐ All day except to

Collection interval

Collect every

Total samples for average calculation

Thresholds

- Single property
- Current value, average, change
- Single or multiple occurrences
- State change
- Fires WMI Event

The screenshot shows the 'Threshold Properties' dialog box with the 'Expression' tab selected. The 'General' tab is also visible. The 'Expression' tab contains a text box with the text 'Specify the condition that must be true to change the status of this item. If an action is associated with the change in status, the action will be run.' Below this, there are two tabs: 'Performance Monitor' and 'WMI'. The 'Performance Monitor' tab is active, showing a list of performance counters. The 'WMI' tab is also visible, showing a list of WMI classes. The 'Expression' tab is currently empty, showing only the text box for the condition.

Threshold Properties

General | **Expression** | **Message** | **Actions**

Specify the condition that must be true to change the status of this item. If an action is associated with the change in status, the action will be run.

Monitoring: **Performance Monitor**

If this condition is true:

If the current value for [RealNumber] PercentProcessorTime is greater than 90.

Duration:

☐ Any time this occurs

☒ At least 6 times in a row (2 mins)

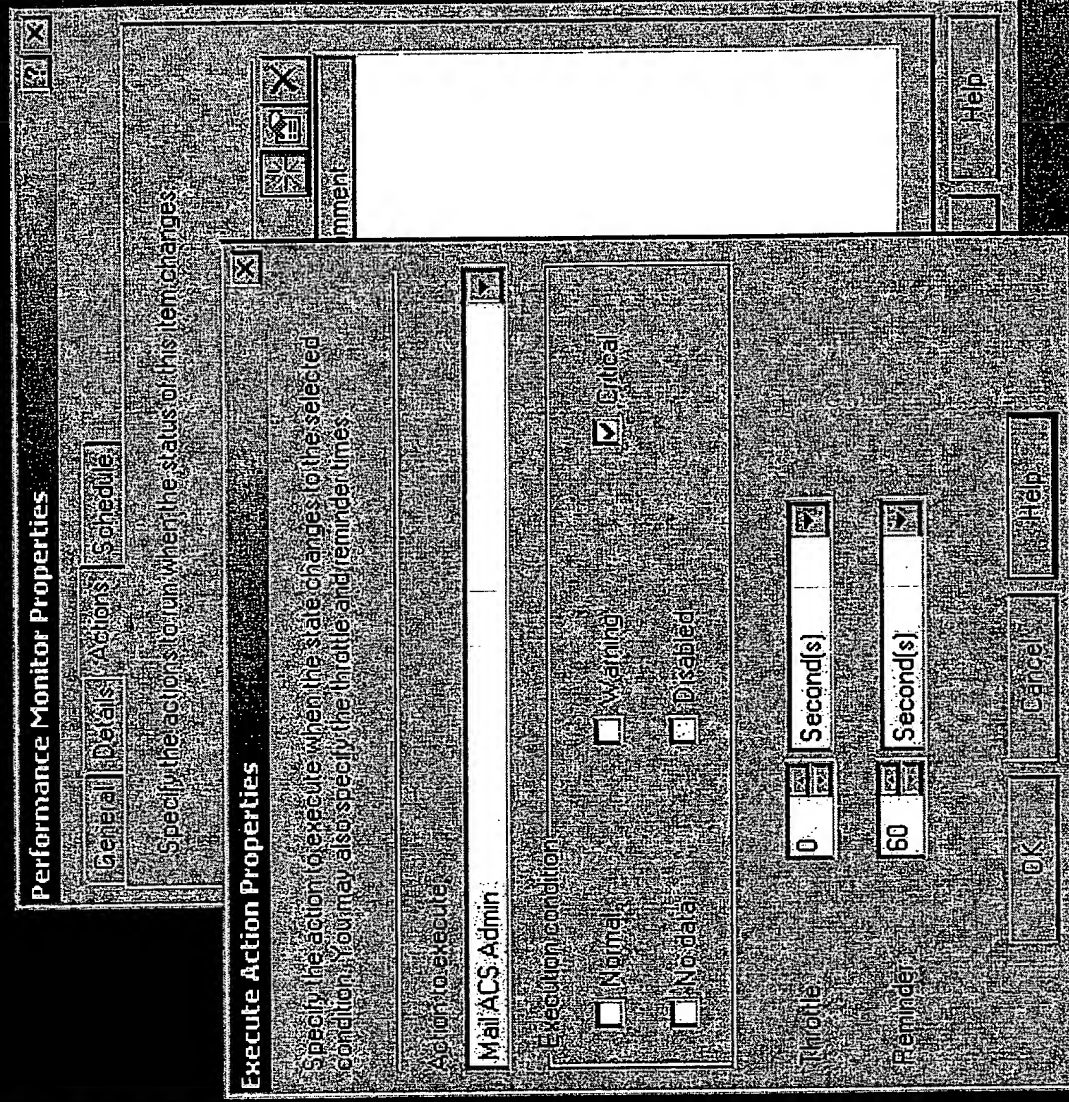
The following will occur:

The status changes to Critical.

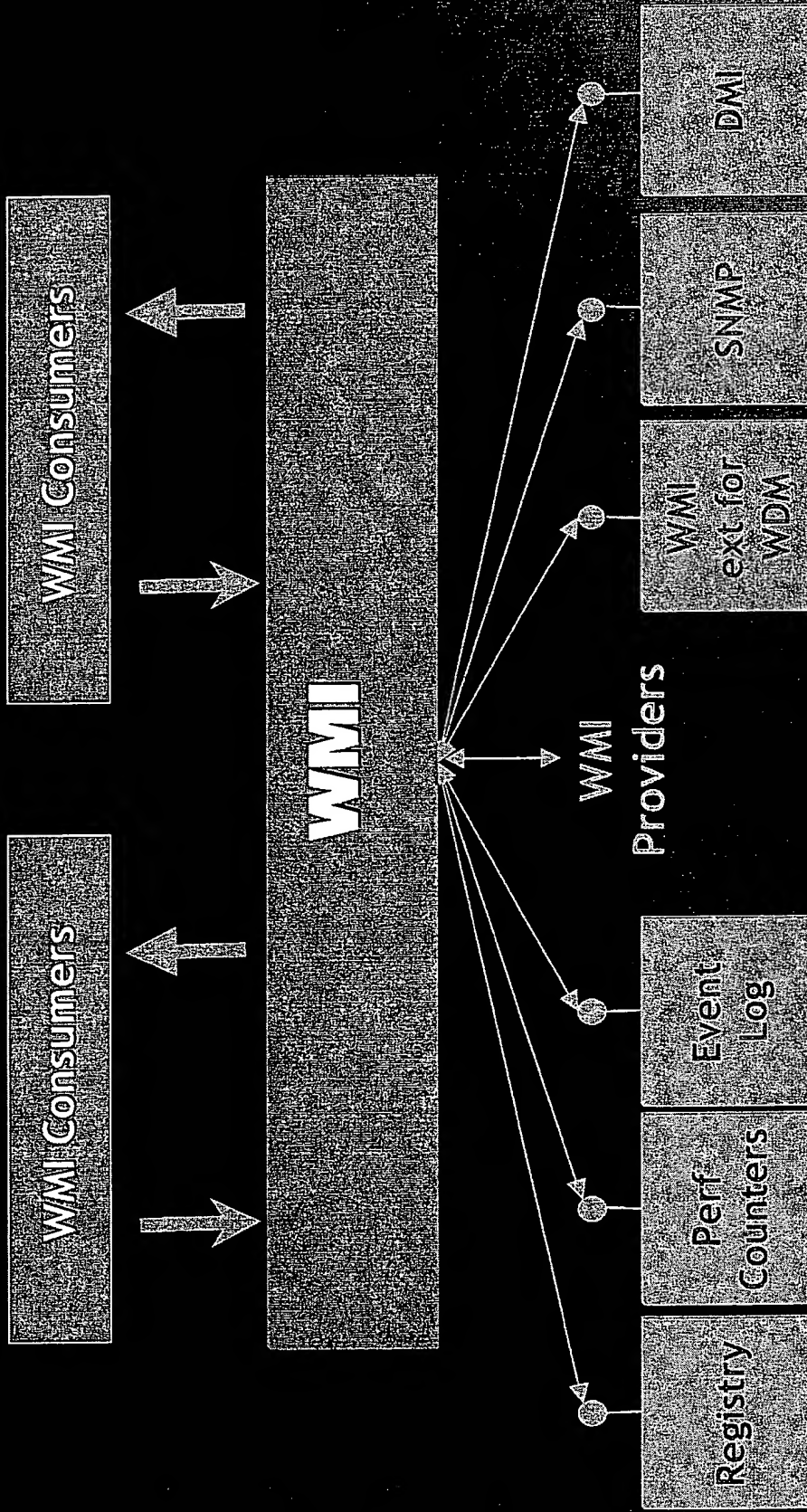
OK **Cancel** **Apply** **Help**

Actions

- E-Mail
- Text log
- Windows log
- Command line
- Script



WMI Overview



WMI Queries

All CIM objects are queryable

```
IWbemServices::ExecQuery  
("select * from Win32LogicalDisk  
  where Win32LogicalDisk.FreeSpace < 2000000")
```

SQL subset w/ new terms

Extensions for Discovery/Traversal of Schema relationships

```
IWbemServices::ExecQuery  
("Associators of {Win32_Service = 'DHCP'}")
```

Event filtering (thresholds, aggregation, inheritance)

```
with XXX -- for specifying the tolerance for event delay
```

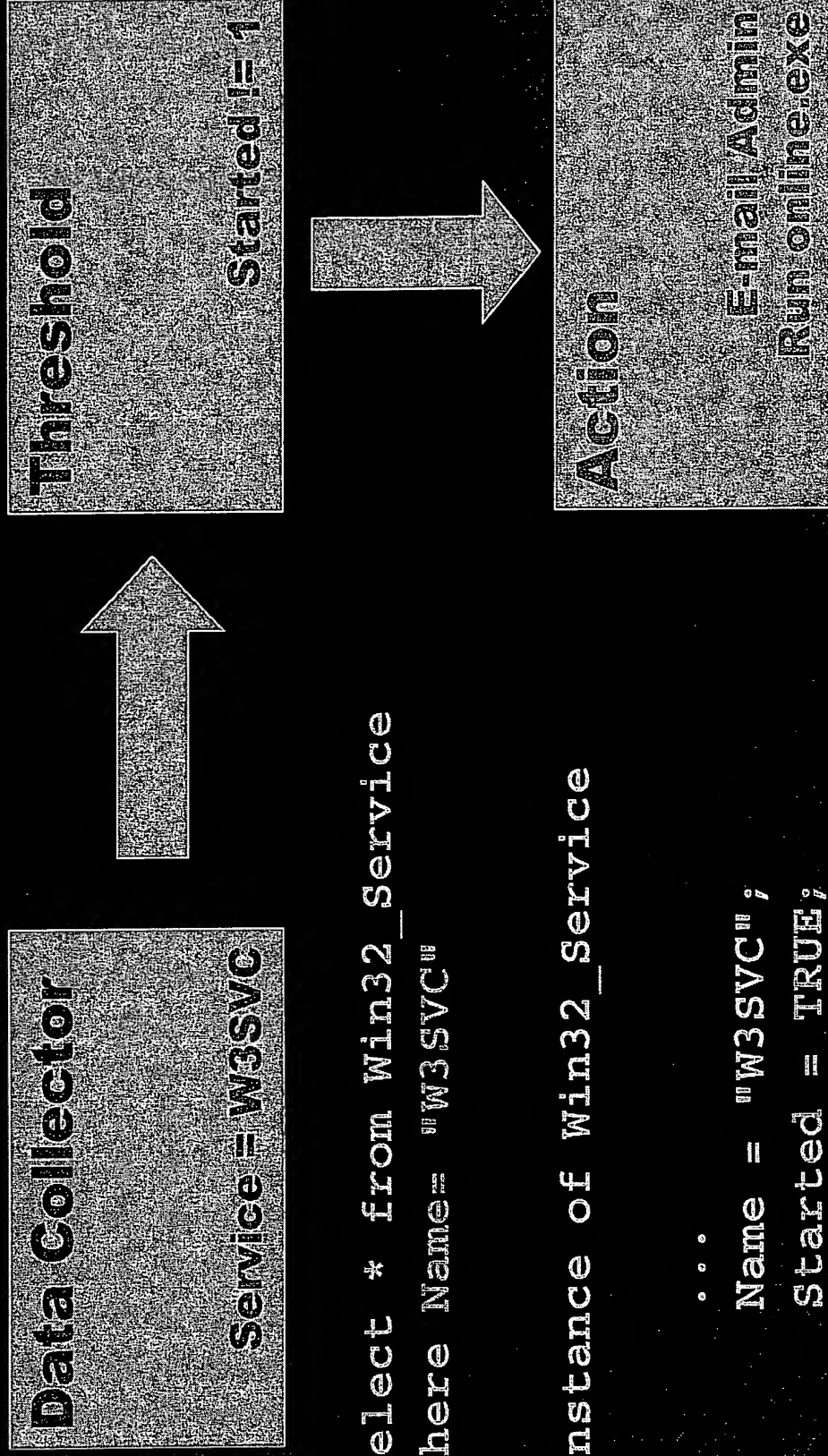
```
with XXX -- registration applies to all events from class (incl. derived classes)
```

```
with XXX (within group by clause) -- specifies aggregation  
interval
```

```
select * from __InstanceModificationEvent within 5  
where TargetInstance isa Win32_LogicalDisk  
group by DriveLetter  
within 10 having count > 25
```

Tip: use wbemtest or CIM Studio

Health Monitor Data Flow



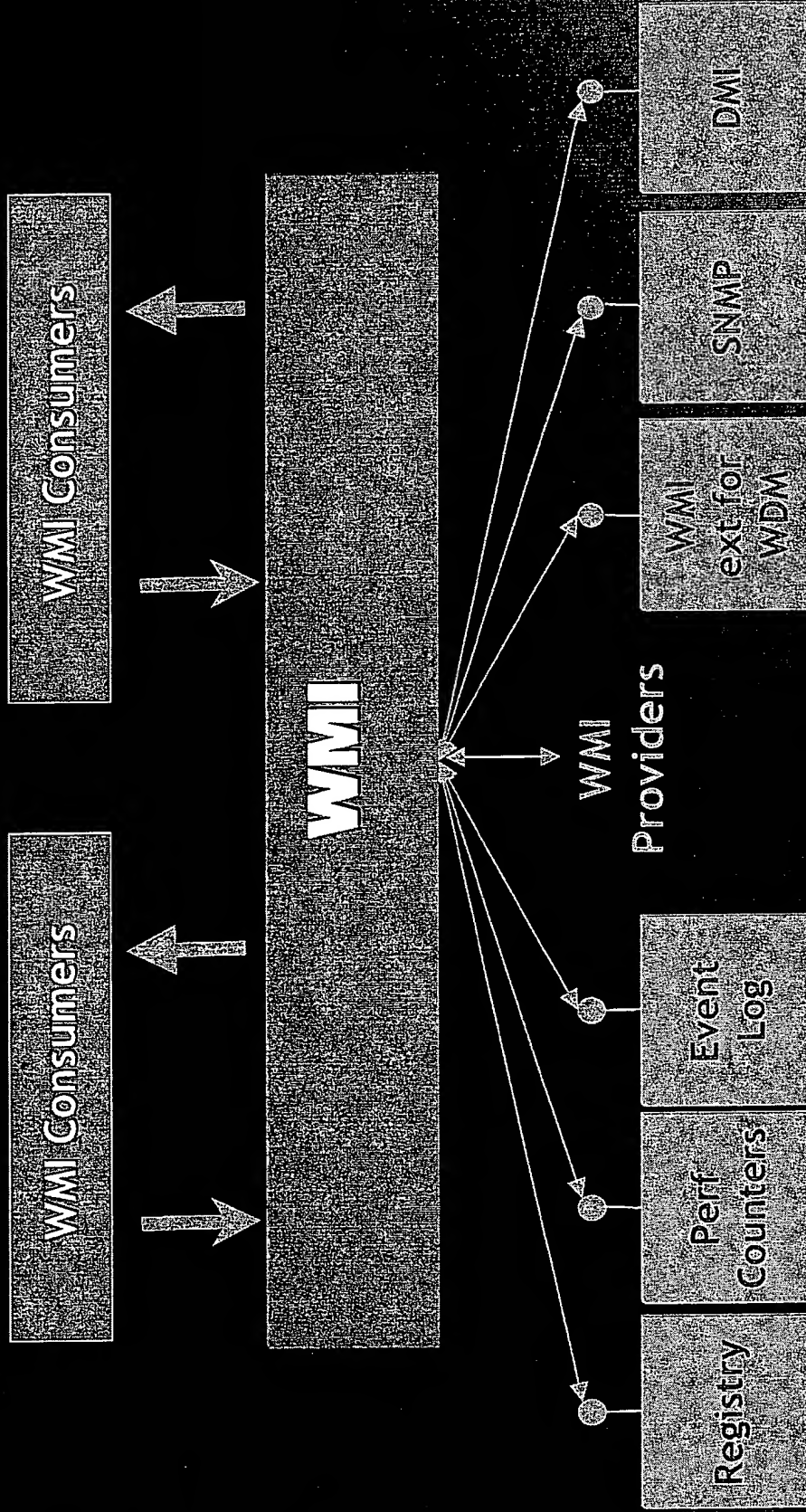
```
Select * from Win32_Service  
where Name= "W3SVC"
```

```
instance of Win32_Service  
{
```

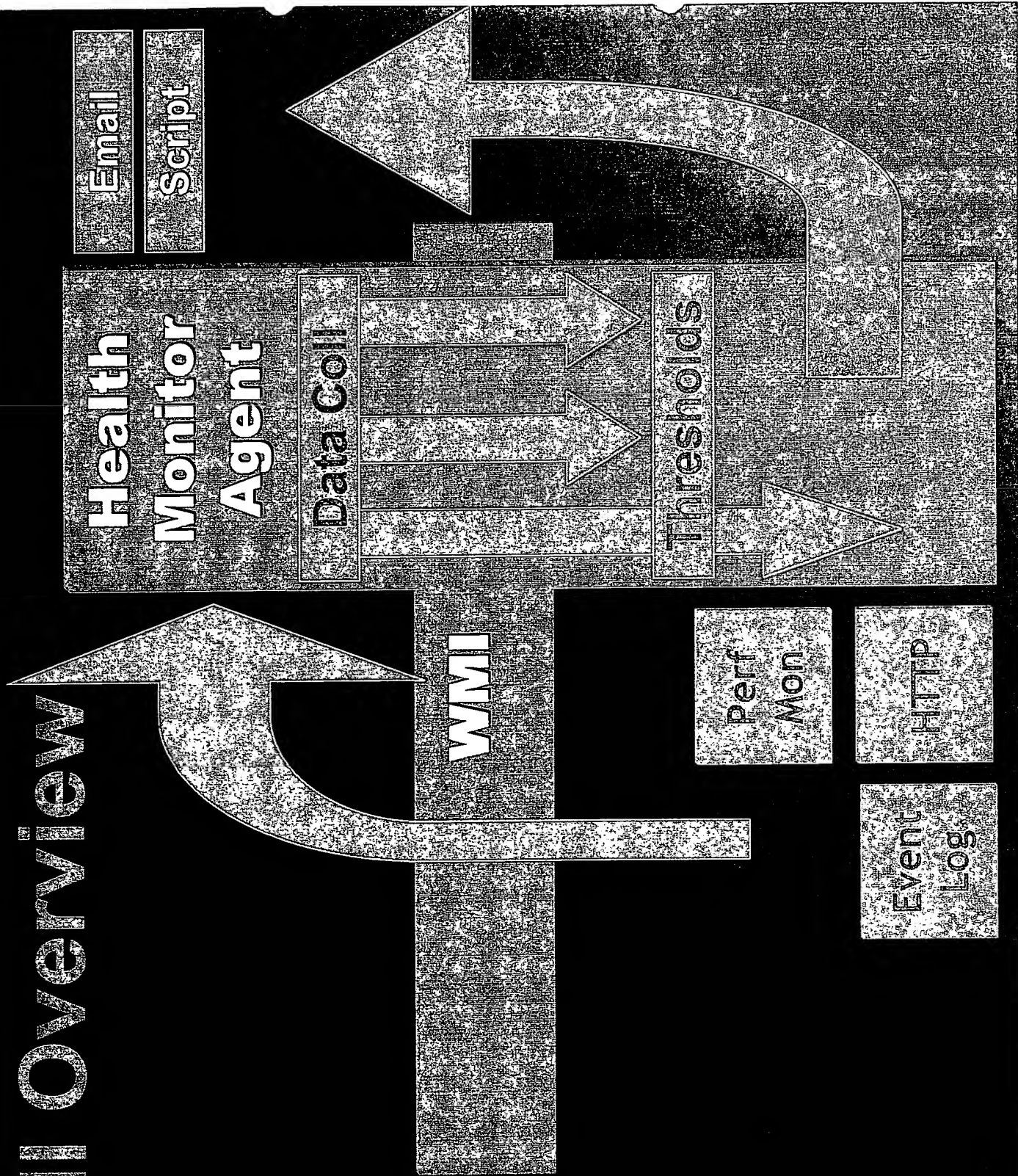
```
...  
Name = "W3SVC";  
Started = TRUE;  
State = "Running";  
...
```

```
};
```

WMI Overview



WMI Overview



Demo: System Health

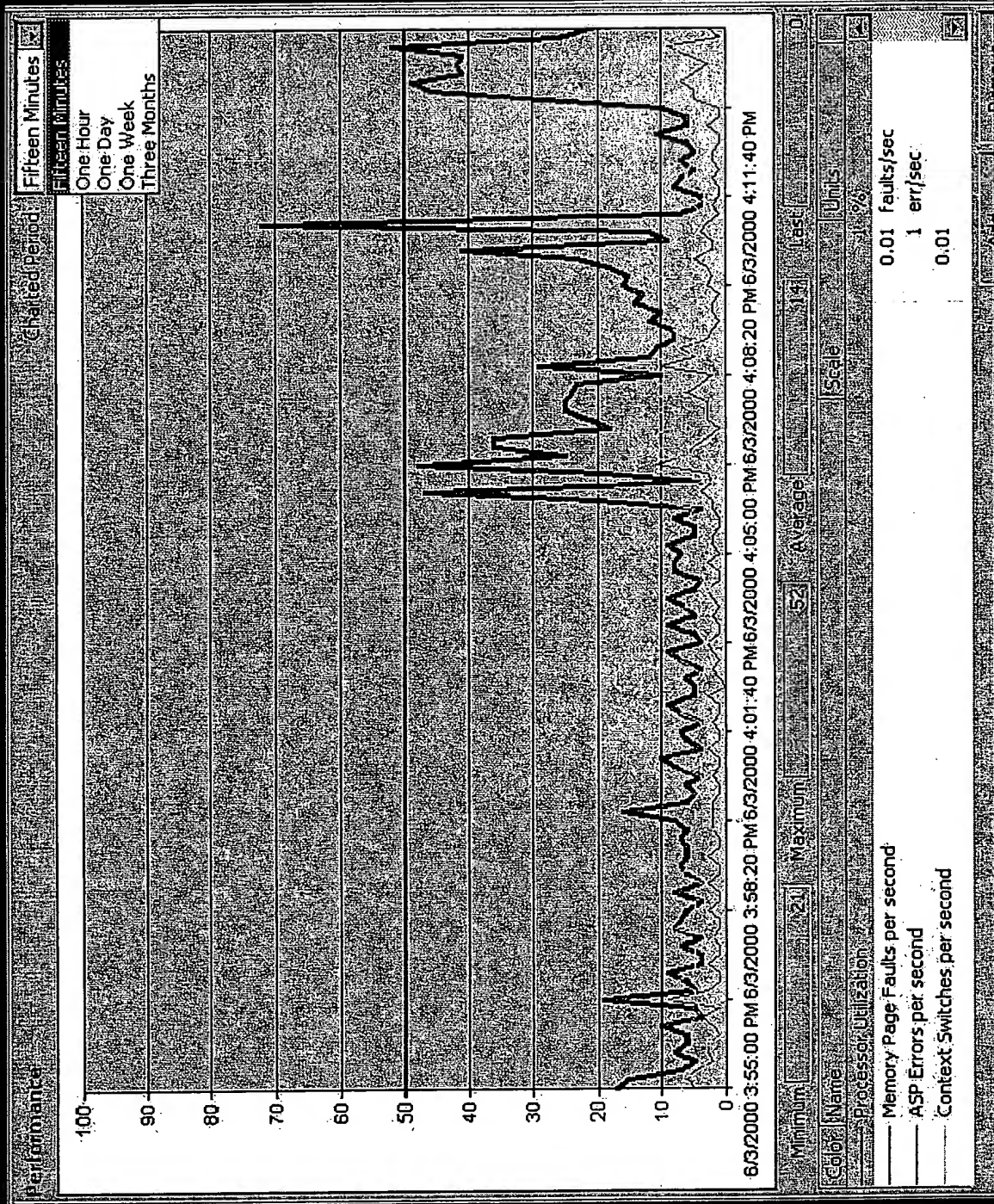
Detect

Analyze

Fix

- Monitor for CPU spikes
- Generate CPU load
- Application Center Perf Viewer
- Application Center Event Viewer
- Application Center Monitor Viewer

Performance Counters



Unified Event Log

| Events | | Help | |
|--|---------------------|-----------------------------------|---------|
| Product | Type | Source | EventID |
| All | Errors and Warnings | | Filter |
| Date | Time | Server | Source |
| 6/3/2000 | 4:29:44 PM | ASUTTON0-TES Service Control-Man | 7032 |
| 6/3/2000 | 4:29:30 PM | ASUTTON0-TES Perfib | 2002 |
| 6/3/2000 | 4:29:27 PM | ASUTTON0-TES DCOM | 10010 |
| 6/3/2000 | 4:29:22 PM | ASUTTON0-TES Home Page verificati | 302 |
| 6/3/2000 | 4:29:17 PM | ASUTTON0-TES Service Control-Man | 7023 |
| 6/3/2000 | 3:54:50 PM | ASUTTON0-TES Cluster | 4026 |
| 6/3/2000 | 3:54:37 PM | ASUTTON0-TES Home Page verificati | 302 |
| 6/3/2000 | 3:54:36 PM | ASUTTON0-TES IISInfoCtrs | 1003 |
| 6/3/2000 | 3:54:36 PM | ASUTTON0-TES W3Svc monitor | 201 |
| 6/3/2000 | 3:54:36 PM | ASUTTON0-TES Monitoring | 8022 |
| 6/3/2000 | 3:54:36 PM | ASUTTON0-TES Monitoring | 8022 |
| 6/3/2000 | 3:54:36 PM | ASUTTON0-TES Monitoring | 8022 |
| 6/3/2000 | 3:54:35 PM | ASUTTON0-TES Monitoring | 8022 |
| 6/3/2000 | 3:54:35 PM | ASUTTON0-TES IISInfoCtrs | 1003 |
| <div> <div>Windows - System</div> <div>Windows - Application</div> <div>Windows - System</div> <div>Health Monitor - Page Returned an error</div> <div>Windows - System</div> <div>Application Center - Indicates that the cluster</div> <div>Health Monitor - Page Returned an error</div> <div>Windows - Application</div> <div>Health Monitor - W3Svc Stopped/Started</div> <div>Application Center -</div> <div>Application Center -</div> <div>Application Center -</div> <div>Application Center -</div> <div>Windows - Application</div> </div> | | | |

X 6/3/2000 3:54:50 PM ASUTTON0-TEST

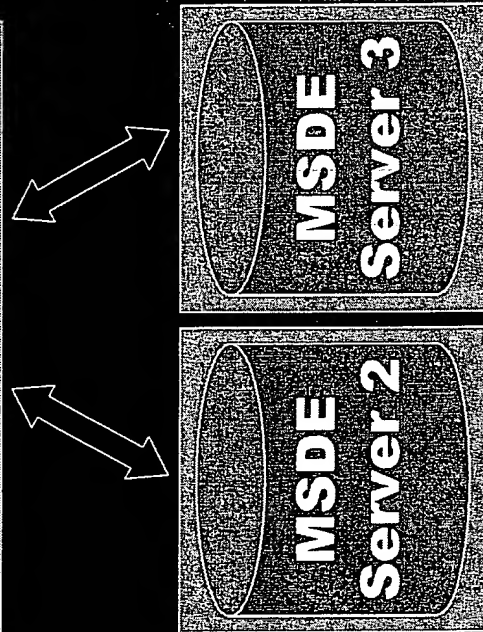
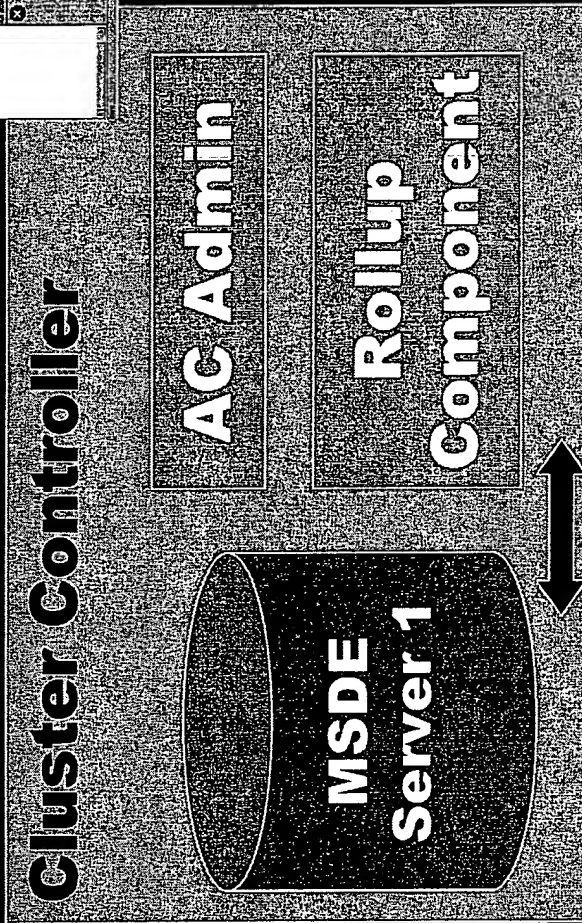
Application Center
Source Cluster Loadbalancing

The server was not brought online because monitor state is critical.
View troubleshooting information for this event

Visit Microsoft Support Online for support information (KB articles, etc.) for this event.

Cluster-Wide View

| Server Name | IP Address | Status | Role |
|---------------|-------------|--------|-----------|
| MSDE Server 1 | 192.168.1.1 | Online | Primary |
| MSDE Server 2 | 192.168.1.2 | Online | Secondary |
| MSDE Server 3 | 192.168.1.3 | Online | Secondary |



Log Access Possibilities

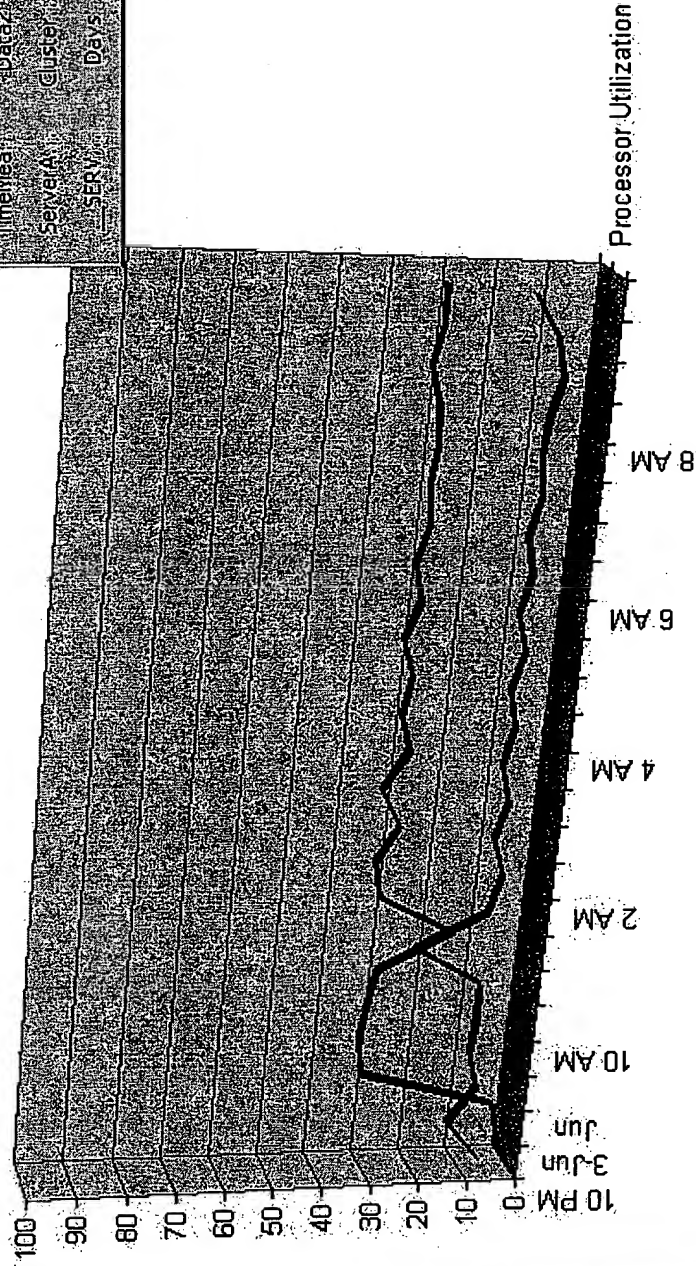
SERVER (All)

Cluster Performance Counters

PivotTable

PivotChart

| TimeMea | ServerA | Cluster | Name | Status | Access |
|---------|---------|---------|-------|--------|---------|
| SERV | Days | Months | Scale | Units | ServerG |



Name

| |
|-------------------------------|
| ■ Processor Utilization |
| ■ TCP Connections Established |



Monitoring Extensibility

- Application Center WMI Provider
- Extract Application Center logs
- Query and reporting tools
- 3rd party monitoring tools
- WMI event consumer

Demo: Application Availability



Detect



Analyze



Fix

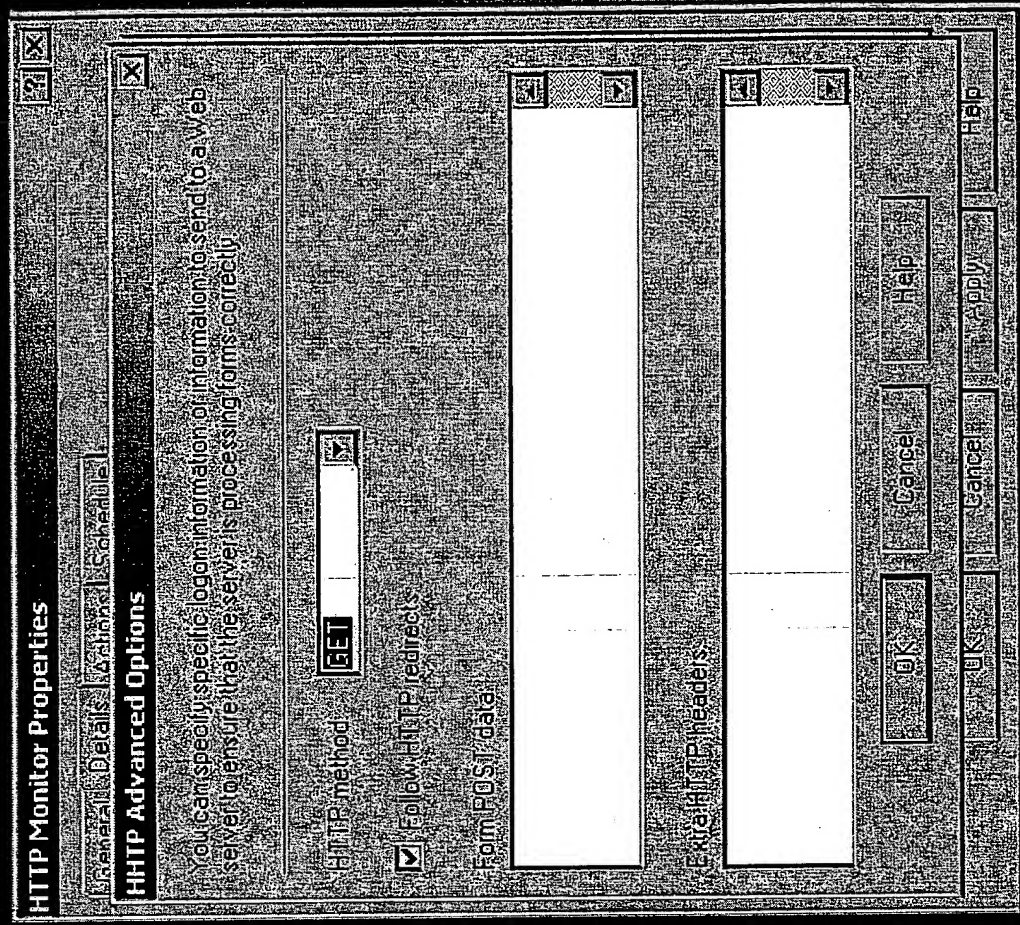
- Create HTTP Monitor
- Web Service Monitor
- Associate Action
- Stop web service on member
- Monitors fail and state goes critical
- Action takes server offline
- E-mail admin and alert in event log

Application Availability

- Monitors can control load balancing
 - If monitor fails, server goes offline
 - Default Application Center rule
- Scriptable to extend behavior
- Beware taking all servers offline
 - Redirect page if database error
 - Or custom scripts

Web Page Monitors

- URL
- Timeout
- Authentication
- HTTP Method
- Post Data
- Custom Headers



Web Page Monitors

■ Response Properties

- ☐ Status code, response time, last modified
- ☐ Text response, binary response, headers
- ☐ Content length, received bytes

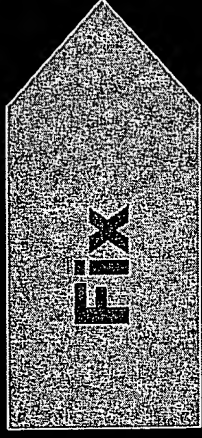
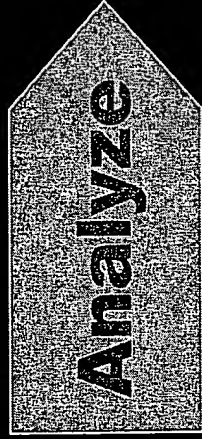
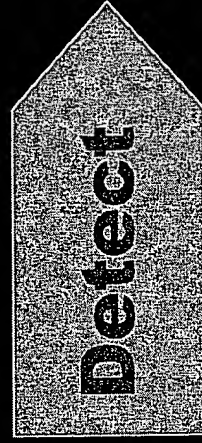
■ Actions

- ☐ Take offline
- ☐ Redirect to a different page
- ☐ Check other monitors
- ☐ Run a script

Database Monitors

- Database health
 - Performance Counters and Events
 - SQL DMO Provider
- Connectivity to the server
 - TCP/IP port connect
- Successful query
 - ASP page

Database Monitoring Script



■ Demo ASP database monitor

COM+ Statistics Provider

■ Execution metrics

- Total committed transactions and per sec
- Total aborted transactions and per sec
- Total object creations and per sec
- Total object activations and per sec
- Shutdowns: total, timeout, admin, failure
- Object pool timeouts

■ Win32_Process statistics (dlhost.exe)

- Handles, working set, page faults, processor time...

Monitoring Health

Web Server

COM+

Database

Sys

**Goal: Customers
can access
your site**

System

System

Web

Service

Event Log

Perf Counters

Events

Queries

TCP Port

Service

Service

Application: HTTP Request & Instrumentation

Application Center Monitoring

■ Health Monitor Integration

- Monitoring samples
- Load balancing control
- Replication of monitors and time
- Operators view

■ Cluster-wide event log

■ Cluster-wide performance counters

Best Practices

Detect

Analyze

Fix

■ Instrumentation

- HTTP, ping and port connect monitors
- PerfMon and Event Log
- WMI Provider

■ Monitor application health

- What does availability mean to you?
- Baseline performance
- Watch out for false positives

Call to Action

- **Install Application Center Beta 1 !**
- **Monitor and instrument your applications**
- **Develop an operations plan**
- **Understand WMI**

Related Sessions And References

■ Other PDC sessions recommended

- Load-Balancing .NET Platform Applications with Application Center 2000
(2-315, Room 311, 9/12/00, 2:45 p.m. Ori Amiga)
- Using WMI to Build Management into .NET Platform Applications
(3-344, Room 304, 9/12/00, 2:45 p.m. Corina Feuerstein; Travis Muhlestein; Stephen Todd)
- Scaling out the Data Tier with Shared Nothing Clustering Technology in SQL Server 2000 and Beyond
(2-328, Room 109, 9/13/00, 5:30 p.m., Pedro Celis)

■ References

- <http://www.microsoft.com/applicationcenter>
- WMI Reference: Platform SDK, Management Services

Where do you want to go today?

Microsoft

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